



Microcredentials and the Master's Degree

Understanding the National Landscape to Support Learners and the Workforce



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Support Learners and the Workforce

A report by the Council of Graduate Schools



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Executive Summary

There has been an absence of research exploring credit-bearing post-baccalaureate non-degree credentials and how their development intersects with master's degrees. To address this gap, the Council of Graduate Schools (CGS) fielded three surveys to CGS's institutional members: one targeted at graduate deans and another targeted at graduate program directors. The third targeted employers in partnership with the National Association of Colleges and Employers (NACE).

This survey data were complemented by six focus groups with key stakeholders, including graduate deans, national employer associations, workforce researchers, registrars, and continuing education/extension administrators. Beyond the focus groups, project researchers conducted over twenty interviews with graduate school administrators, employers, and researchers. This research was presented at a workshop in June 2023 where the findings were discussed, and a set of principles and action agenda were drafted (see Appendix C). Employing this mixed-methods approach has allowed us to address questions about processes for the creation and administration of post-baccalaureate non-degree programs as well as the diverse motivations for building them.

While this report includes details about the current landscape, our most important findings are as follows.

- Post-baccalaureate certificates are best understood as part of a larger ecosystem including graduate degrees, not as an alternative to graduate degrees. Qualitative research found that many students enrolled in graduate certificates were currently enrolled master's students. In fact, leveraging certificates and other microcredentials to improve or update current master's program curricula was an emerging practice championed by some universities that participated in the focus groups and interviews.
- Many certificate programs have small enrollments. Out of the 196 responses to the program directors survey, the median program enrollment was only twelve students, and many programs were significantly smaller. This finding should give pause to administrators that see these programs as drivers of future graduate enrollment.
- Departments and programs remain the drivers of program creation. Despite a flurry of interest in employer partnerships, seventy-seven percent of respondents to the dean's survey said departments and programs were responsible for developing programs. These survey findings were echoed in focus groups where faculty advocacy and activity emerged as vital elements of program success.

Studying a new and evolving landscape requires close attention to language as terms are often not well-defined and used differently in different contexts. For the purposes of this study, we use the terms "microcredential" and "non-degree program" to refer to the broad spectrum of certificates, badges, bootcamps, and other educational programs that are not degrees.

- The quality of microcredentials remains a question, though employers have more faith in universities as credential providers than private providers or even other employers. In our conversations with stakeholders, concerns about credential quality and quality assessment were persistent due to the accelerated and uneven nature of credential expansion. Still, according to responses to questions that we included in a recent NACE survey, certificates and microcredentials offered by institutions of higher education are more trusted than credentials offered by other providers.

- The practice of “stacking” certificates is still in the development phase at many institutions. Combining microcredentials into master’s degrees or other credentials has the potential to provide flexibility and increase access. However, currently only fifty percent of the certificates described by our institutional survey takers were characterized as “stackable.” Findings from our qualitative research activities suggest that this may have to do with the newness of many of these non-degree credentials and the need to create practices that ensure that stacks of credentials meet degree requirements. However, we don’t yet know to what extent stacking is a function of institutional infrastructure or student demand.



Foreword

The increase in post-baccalaureate non-degree credentials has been a hot topic in graduate education in recent years. Beginning in the early 2000s and then accelerating during the COVID-19 pandemic, a diverse array of non-degree credentials including certificates, digital badges, and other microcredentials emerged to serve students needing flexible options. An opportunity emerged to make graduate education more flexible and accessible and align graduate education with workforce demand for new skills and competencies.

Often these new credentials have been juxtaposed against graduate degrees and viewed as their replacement. As this report shows, however, the best available information tells a different story: post-baccalaureate non-degree credentials are currently best understood as working alongside graduate degrees and in particular, the master's degree. These non-degree credentials serve a variety of functions to better serve students and universities.

Microcredentials hold out pathways into master's programs for non-traditional learners, augment master's programs with new skills and competencies, and create opportunities for interdisciplinary study and collaboration.

In many cases, emerging credentials support innovation in graduate education, offering spaces where students, faculty, and administrators can experiment with novel approaches to learning. While there remain important questions about credential quality, their value, and workforce demand for emerging credentials, non-degree credentials offer a shorter, more affordable pathway for some students. They may also be an opportunity for students to try a low-stakes experience with graduate education that may lead to further study and training. Having multiple pathways into graduate education is vital to ensuring that advanced education is diverse and flexible enough to meet the needs of students and employers requiring advanced skills and competencies.

Suzanne T. Ortega

President, Council of Graduate Schools

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Chapter 1

Setting the Context: Postbaccalaureate Microcredentials in the United States

The graduate education ecosystem is changing. While degrees remain the dominant credential type, other credentials, including certificates, digital badges, bootcamps, and other microcredentials have emerged as important parts of graduate education. These non-degree credentials serve many purposes. Some were created to fill licensure or certification requirements for a particular career or industry. Others were designed to augment existing degree programs with specialized skills or competencies. Still others were created as stand-alone credentials to upskill or reskill current workers for careers in rapidly changing fields like data science/analytics, artificial intelligence, and cybersecurity.

Since these non-degree credentials serve diverse purposes, they have evaded easy definition and categorization. There are a set of broad characteristics, however, that many emerging credentials share. First, these credentials are closely aligned with (real or imagined) employer demand. As McGreal and Olcott suggest, the rise of non-degree credentials is part of a broader “credentials rethink” brought about by a renewed focus on workforce-relevant skills and competencies (McGreal & Olcott, 2022). As such, these credentials tend to certify either workforce-ready skills like data analytics or emerge in fields of high workforce demand, like cybersecurity. Second, these credentials are often offered in an online or hybrid format. Online graduate education has been a trend for over a decade, but the COVID-19 pandemic accelerated learner demand for

online-only or primarily online programs (McGreal & Olcott, 2022). Non-degree credentials have provided a flexible format to deliver online programs to learners where full-time in-person degree programs are not possible. Finally, these programs tend to be shorter than degree programs. Time-to-degree and return on investment have been two challenges confronting graduate degree programs in recent years. Though degrees have been remarkably durable and valuable, learners desiring more modular approaches to graduate education have been drawn to non-degree credentials as more immediate pathways to career advancement.

Given the definitional uncertainty in this emerging credential ecosystem, this study focuses on transcribed, credit-bearing, post-baccalaureate certificates, though it will also touch on other microcredentials. This focus was partly to avoid definitional confusion when conducting survey research (see chapters 2 and 3 for more information) among Council of Graduate School (CGS) member institutions and graduate deans. We also chose to focus on certificates because such credentials are better established. As will be discussed in the chapters that follow, other types of microcredentials in post-baccalaureate education are so new that providing a coherent national picture or framework for understanding them is not yet possible.

For the purposes of this study, we will use “microcredential” and “non-degree program” interchangeably to refer to the broad spectrum of certificates, badges, bootcamps, and other educational programs that are not degrees. These programs may be for credit or not for credit. When possible, we will refer to the specific credential given upon program completion (certificate, digital badge, master’s degree, etc.), though some of the literature and our own research activities explored a variety of subcategories of microcredentials.

The rest of this chapter provides context for the study. We examine issues of:

- Workforce demand for these credentials
- How they are perceived by employers
- How quality is assessed and implemented
- And whether they promote access to graduate education for diverse students.

Program Creation and Institutional Need

One of the foundational questions for this study is why universities are creating non-degree credential programs. Early creators of graduate microcredentials suggest that part of their reason for launching new credential programs was an interest in “aligning classroom teachings with the market needs of industry” (Catania, 2005, p. 20).

Through this alignment, new programs were designed to bridge the gap between “school and work,” and to create employment opportunities for students upon graduation. Through collaborations with potential employers and industry partners, this has allowed universities to target the skillsets identified and shape their microcredentials or other curricula around a specific set of outcomes (Catania, 2005). This also allows for institutions to target sectors within a market, such as healthcare or technology (Catania, 2005).

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While aligning learning and work is the most cited reason for creating these programs, there are other factors that may motivate universities to pursue microcredentials. There is good evidence that microcredentials are designed to meet student demand. In a tight labor market, which was the standard during the time when this study was carried out, learners (be they early career learners, or those with considerable work experience) may be looking for ways to set themselves apart from others competing for the same position. The addition of a certificate on their resume may be attractive to the employer or graduate admissions officer (Coursera, 2023).

For institutions experiencing or projecting enrollment declines, microcredentials may offer a way to quickly diversify program offerings that are attractive to prospective learners, including those who may not otherwise be able to access graduate programs. For example, the University of North Texas designed and created a credential focused on providing advanced opportunities for students seeking to apply to medical school (Reeves, et al., 2008). Reeves et al explains that many students who are unable to gain admission or acceptance to medical school through “traditional admissions processes” typically attend these post-baccalaureate programs to improve their admissions chances or gain admission to a medical school through an alternative method. Credentialing this learning adds an incentive to participate in the program, recognizing the learning without reaching the threshold for creating a new degree.

It is important to note that while non-degree programs have been frequently heralded for their innovative approaches to higher education, degree programs and the new generation of emerging credentials often have the same genesis. As a recent UPCEA survey has demonstrated, most new alternative credentialing program ideas come from university faculty and staff (Fong & Halfond, 2020). Even in cases where universities partnered or collaborated on credential programs, this collaboration was more often mediated through a university staff member or advisory board, instead of through direct industry partnership. These findings are echoed in our research and demonstrate the important role that faculty and staff play in creating certificate programs even if that program is anchored by a partnership with an employer.

Employer Demand and Hiring Preferences

The literature on employer demand for non-degree credentials tells an inconsistent story. A recent report published by the University Professional and Continuing Education Association (UPCEA) noted that while employers valued non-degree credentials, concerns about quality and legitimacy clouded their outlook (Fong, et al., 2022; Fong, et al., 2023). These concerns echo other recent research by the Society of Human Resource Managers (SHRM), which found that while corporate executives were enthusiastic about non-degree credentials, human resource managers were more dubious, often unsure what non-degree credentials signaled (SHRM, 2022). Since many of these credentials are so new, employers do not understand what they mean and may not even have applications systems or hiring policies that account for them (Gallagher, et al., 2023). These findings suggest that employers are still learning about non-degree credentials and may require more time to develop hiring policies that take them into consideration. Degrees can help bridge this gap.

Research continues to demonstrate that microcredentials are seen as complements, not replacements, to traditional undergraduate or graduate degrees (Ashcroft, 2021; Gallagher, 2018; Rosendale, 2016). This may be particularly true for graduate certificates, many of which are embedded in graduate degree programs or which primarily enroll students from other graduate degree programs.

Gaps in the data continue to impair our understanding of how non-degree credentials improve employability and serve as a reminder that employers are not a monolith. Industry sectors, occupations, and fields of study are all highly varied, making it important to bring nuance and detail to conversations about non-degree credentials and employability. While a recent OECD study has shown that workforce advancement is the primary motivator for learners taking microcredentials, there is an absence of cross-sectional studies examining why employers might hire a person possessing a non-degree credential (OECD, 2016). Lack of employer transparency and data were themes of this project, which carried through from the literature review to the research process.

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Credential Quality and Transparency

One of the frequently documented employer concerns about microcredentials is the quality of the credential. Again, definitional uncertainty plays a role here.

- What do we mean when we say a credential is “high quality” or “low quality”?
- How might that definition differ across credential providers?
- Do employers have consistent definitions of quality?

These questions about quality are not unique to non-degree credentials. However, degrees, and the institutions that grant them, already have an established track record of success and a system of accreditation that is widely recognized.



There have been national efforts in recent years to standardize definitions of quality and make credentials more transparent to learners and employers. From 2008 until 2018, the Interagency Working Group on Expanded Measures of Enrollment and Attainment (GEMEnA) developed definitions of several key terms and core survey questions in key federal data collections. This work has been augmented by non-profit and university stakeholders. Credential Engine maintains a searchable registry of credentials with some standardized language with the ambition to “map the credential landscape with clear and consistent information, fueling the creation of resources that empower people to find the pathways that are best for them” (Credential Engine, 2021).

There is some overlap between this effort and Credential As You Go, a platform first developed with funding from the Lumina Foundation, which seeks to support the “redesign and integration of credentialing systems across states, higher education, and third-party providers, including employers, to recognize all learners for what they know and can do” (Credential As You Go, 2023). As an example of a university-based project, Rutgers University has developed a framework for assessing non-degree credential quality around four areas – credential design, competencies, market processes, and outcomes (Van Noy, 2019). Finally, the National Skills Coalition launched the Non-Degree Credential Quality Imperative earlier this year to promote state-based frameworks to assess non-degree credential quality (National Skills Coalition, 2023). This initiative leans into America’s federated government structure, which improves the likelihood for adoption, but has the potential to exacerbate learner confusion around credential quality by creating fifty different sets of standards and definitions.

These initiatives are important efforts to create metrics of quality for microcredentials, as are other national initiatives to create frameworks for credential quality, such as those in Ontario, Australia, and New Zealand (Lang, 2023). On a transnational scale, UNESCO and the European Union have created frameworks to assess quality, though the process for implementation has been unclear.

One question that has emerged around microcredential quality assessment is to what extent models used to determine degree quality apply to non-degree credentials (Boud & Jorre De St Jorre, 2021). Boud and Jorre De St Jorre note that degree quality assessment often takes curriculum sequencing into account, which may be absent or unclear with non-degree credentials, even if they stack into degrees. They suggest that it may be harder to track the learning outcomes of a microcredential, based on what path a student has chosen to take within the program, or other options they have sought for flexibility. In this way, the flexibility which is a core part of the value of these non-degree programs may make it more difficult to determine learning outcomes, which are vital for effective assessment.



One question that has emerged around microcredential quality assessment is to what extent models used to determine degree quality apply to non-degree credentials (Boud & Jorre De St Jorre, 2021)

Equity and Access

Much of the research on non-degree credentials has focused on how sub-baccalaureate and community college credentials can create accessible pathways to good jobs (Daugherty, et al., 2023). The promise and results of these initiatives have not always been in sync, however. The Center for Racial Economic Equity, for example, has championed a combination of incremental credentialing and skills-based hiring as drivers of economic upward mobility for Black Americans. At the same time, Michael Collins, the Center's Vice President, has expressed concerns that this approach may "inadvertently create a ceiling for Black economic advancement" if this movement is not tethered to opportunities for advance degree acquisition (Collins, 2023).

As we will discuss in the body of this report, there is uncertainty about the impact of post-baccalaureate non-degree credentials on diversity, inclusion, and access. On the one hand, non-degree credentials provide more flexible and often more affordable entry points into graduate education. On the other hand, they could create an additional credential barrier making it more difficult for bachelor's or master's degree holders to gain access to desired careers. This is an area where future research is needed and better information is required before any proclamation on post-baccalaureate non-degree credentials as vehicles to promote diversity, inclusion, and access can be made.

Unfortunately, there is little evidence connecting pre-baccalaureate non-degree credential programs with the advanced credential ecosystem of non-degree credentials and graduate degrees. The literature is bifurcated between pre-baccalaureate programs as tools to promote access and post-baccalaureate, non-degree credentials that are viewed primarily as tools for career advancement.



While these four themes have predominated in the literature, many questions and gaps remain.

This study attempts to fill one of these gaps by focusing on graduate education. However, this report is an exploratory study of a credential ecosystem in flux. While flexibility and change have allowed new post-baccalaureate credentials to fill in educational gaps around and in conjunction with degrees, that same flexibility has made it difficult for researchers, credential providers, and students to assess the value and durability of these credentials. Our research findings, which we turn to in the next chapter, shed light on new avenues for study of this important topic.

Chapter 2

Organization and Administration of Post-Baccalaureate Certificates

One of the key questions guiding this project was how transcribed post-baccalaureate certificate programs were administered at institutions of higher education. To address this question, CGS surveyed its membership to capture what graduate deans and certificate program directors know and understand about post-baccalaureate certificates offered by their institutions. The surveys focused on certificates that are documented on an academic transcript and require a bachelor's degree for admission. Informed by the focus group discussions, the CGS research team developed the post-baccalaureate certificate survey of graduate schools and the survey of certificate programs.

The survey of graduate schools was fielded to CGS member institutions between January and February 2023. The survey response rate was 46%. In March 2023, we asked graduate deans to forward a similar survey to post-baccalaureate certificate program directors on their campuses so that we could gain more insight into the way certificates are developed and delivered at the program level. The survey of certificate programs received 298 responses from 64 institutions. This chapter summarizes and discusses the findings from the two surveys.

The chapter is organized by the four themes in the literature review:

- Program Creation and Institutional Need
- Credential Quality and Transparency
- Equity and Access
- Employer Demand and Hiring Preferences



Program Creation and Institutional Need

One area of interest in post-baccalaureate certificates is to understand how post-baccalaureate certificate programs are developed and administered. In the survey of graduate schools, we asked graduate deans which units on their campuses are responsible for developing and administering these transcribed, credit-bearing post-baccalaureate certificates. First, we heard that graduate deans play a significant role in post-baccalaureate certificates. Most (90%) graduate deans reported that some or all policies affecting post-baccalaureate certificates fall within the purview of the graduate school. These policies include admission criteria, program requirements (e.g. minimum number of credit hours, course level,) requirements upon matriculation and performance standards.

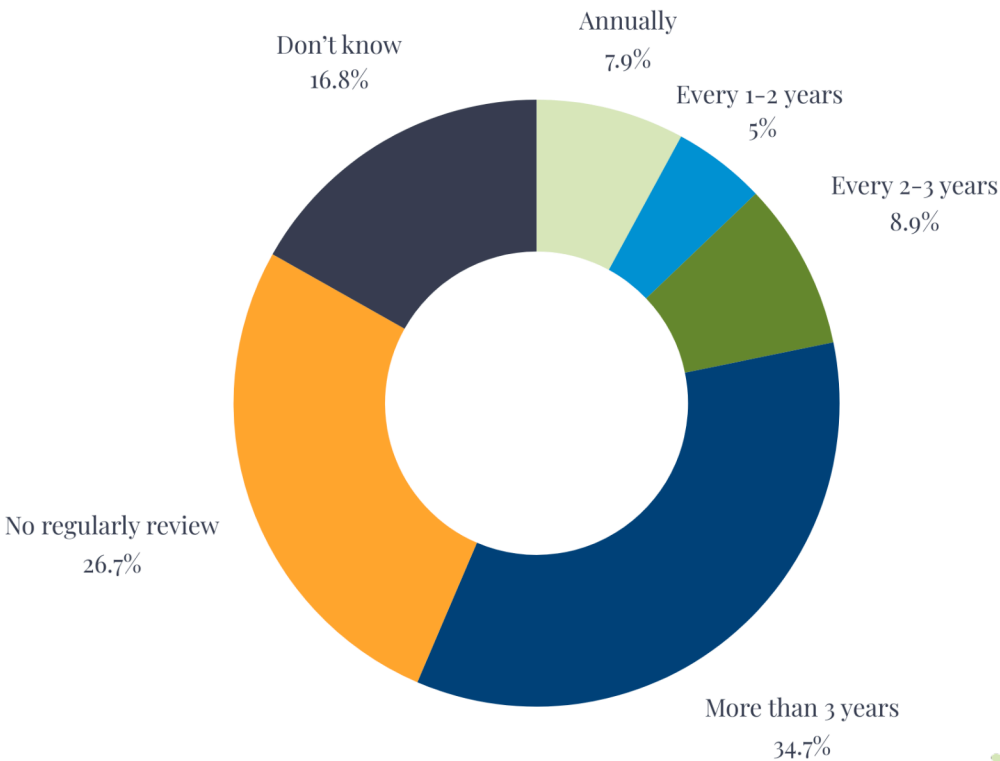
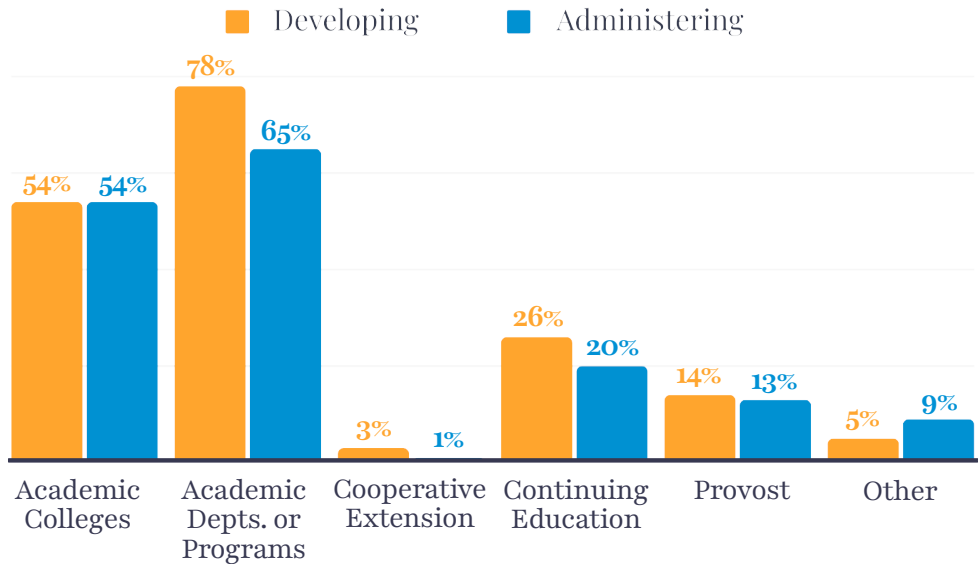
There are many administrative models for post-baccalaureate certificate programs. Many institutions reported that the units that are responsible for developing and administering post-baccalaureate certificate programs are the department or program (77%) and the academic college (54%). In addition, continuing education is another important unit that is responsible for developing and administering post-baccalaureate certificates (26%). Post-baccalaureate certificates also present an opportunity for administrative innovation. As the case study from Marquette University on page 18 demonstrates, certificates can be used to augment existing degree programs with new skills and competencies.

While universities and programs have some room to innovate, it is important to note that State Higher Education Departments and State Boards of Regents have approval processes in place that may limit how quickly new programs can be created. When comparing the approval process for a certificate program to the approval process for a degree program, graduate schools reported that their certificate programs sometimes have the same approval process as degree programs from the State Higher Education Department (45%) or State Board of Regents (39%). Other institutions reported having a simplified approval process for certificates from the State Higher Education Department (45%) or State Board of Regents (22%). These data show that while there can be room for innovation within university policies, in some cases those changes have not yet been made to state approval processes.

The survey of graduate schools also asked how long it takes to get final approval to begin offering a graduate certificate. According to 64% of respondents, certificate programs require 6-12 months to get final approval. A majority (76%) of deans reported a required minimum credit hour, most commonly 12, but this minimum might range from 9 or 15 credit hours.

We also learned about areas where post-baccalaureate certificate programs were most common. Among responses in the survey of certificate programs, the most common fields of post-baccalaureate certificates are teaching, data science/ analytics, interdisciplinary programs, management, psychology, and health care. In terms of delivery models, a majority of the post-baccalaureate programs are fully online.

Which units on your campus are responsible for developing and administering these transcribed, credit-bearing postgraduate certificates?



- Data points that are used to evaluate the curriculum and the quality of certificates:**
- Student learning outcomes assessment (16.7%)
 - Size of enrollment (15.9%)
 - Faculty qualifications (13.7%)
 - Completion rates (11.9%)
 - Career outcomes (6.5%)
 - Employer satisfaction (2.3%)

How often does your institution review the quality and content of graduate certificate offerings?



Administrative Innovation – The Hub and Spoke Model at Marquette University

Lesson: Certificate and other non-degree credential programs provide an opportunity to rethink administrative structures that may impede innovation.

The evolving ecosystem of postbaccalaureate certificates and other microcredentials presents an opportunity for a university to rethink its credential portfolio to target emerging fields and better support students. While much of the attention has been given to how microcredentials can stack into degrees, stacking is not the only way non-degree credentials can intersect with degrees. Certificates and microcredentials can be useful ways to update and customize master's and doctoral degree programs to provide students with an opportunity to add marketable skills and competencies without having to change the degree program.

At **Marquette University**, graduate school leadership identified data analytics as a skillset with high employer and learner demand across several master's degree programs. Instead of changing each degree program to incorporate those skills (skills which may not have been relevant to all learners enrolled,) administrators proposed a "hub-and-spoke" model to integrate data skills into master's programs. The hub of the model was a fifteen-credit certificate in data science. This certificate was designed to provide the foundations in data science that could have applicability across specialties. Starting from that hub, four master's of science degree pathways were added in healthcare analytics, criminal justice data analytics, sports and exercise analytics, and data science. Each of these master's of science degrees require a thesis or practical experience capstone where learners can apply their data science knowledge to their specialty field.

One of the strengths of Marquette's hub and spoke model is its flexibility. Relevant spokes can be added to the data science hub without changing the certificate. At the same time, program spokes may be removed or changed without disrupting the hub or the other spokes. This happened at Marquette where the initial healthcare analytics spoke was discontinued in 2023 after it struggled to enroll students. Despite this change, the data science hub-and-spoke has seen steady distributed growth, with the Master's of Science in Sports and Exercise analytics being particularly successful.

Yet another strength of this model is that it incorporates interdisciplinarity. The common data science backbone of careers in criminal justice, healthcare, and sports science may not be readily apparent to researchers in those fields. However, the hub and spoke model highlights the data science foundation and allows new avenues for interdisciplinary collaboration.

Credential Quality and Transparency

Emerging post-baccalaureate certificates often do not fit neatly into existing quality assessment frameworks. In our survey, we asked how often an institution reviews the quality and content of graduate certificate offerings. About 21% of respondents reported that they conducted certificate program reviews every 1-3 years; over 30% reported they review their certificate programs at intervals of more than 3 years. However, about 26% reported that there is no regular program review process. Determining when a program no longer meets learner and employer demand is another issue. Approximately 66% of graduate deans reported that their institutions have a sunseting process for microcredentials.

According to the survey of graduate deans, most certificate programs (76%) in their institutions utilize the same curriculum and approval processes as other graduate courses or degree offerings. Moreover, the same faculty are most likely to teach both graduate certificates and graduate degree curricula.

*Compared with the data currently used on program evaluation, graduate deans report that **career placement and outcomes, student satisfaction, employer satisfaction, and licensure** should be given more weight in evaluating curricula.*

In the survey, we asked graduate deans to identify data points that were used in

certificate program evaluation. The top data points institutions used to evaluate the curriculum and the quality of certificate programs are student learning outcomes (17%), the size of enrollment (16%), faculty qualifications (14%), and completion rates (12%). There were fewer institutions that used career outcomes (7%) and employer satisfaction (2%) as data points to evaluate the certificate programs as compared to degrees. Compared with the data currently used on program evaluation, graduate deans report that career placement and outcomes, student satisfaction, employer satisfaction, and licensure should be given more weight in evaluating curricula. However, one challenge of quality assurance is that institutions do not have enough data on student career outcomes, salary, and employer feedback to inform quality assessment of certificates. This may be related to the infrequency or lack of program review, or to the novelty of certificates in certain fields.

Program transparency was identified as another important aspect of program quality. The survey of certificate programs asked what information about certificate programs is listed on the departmental or university website. Many certificate program directors indicated that the description of courses and requirements (62%), learning objectives (57%), competencies (47%), and learning outcomes (48%) are available. Fewer certificate program directors indicated that alumni testimonials (11%), certificate holder career outcomes (19%) as well as cost and financing information (36%) are publicly available on the program website.

Equity and Access

While certificates have often been presented as a flexible pathway into degrees that promotes access, we found that post-baccalaureate certificates have a mixed relationship with degree programs. The survey of certificate programs asked if the certificate that enrolls the largest number of students is stackable or not. **About one-half of post-baccalaureate certificate program directors reported that the post-baccalaureate certificate is not stackable, while another half reported that they can be stacked or used as the building blocks of a degree.**

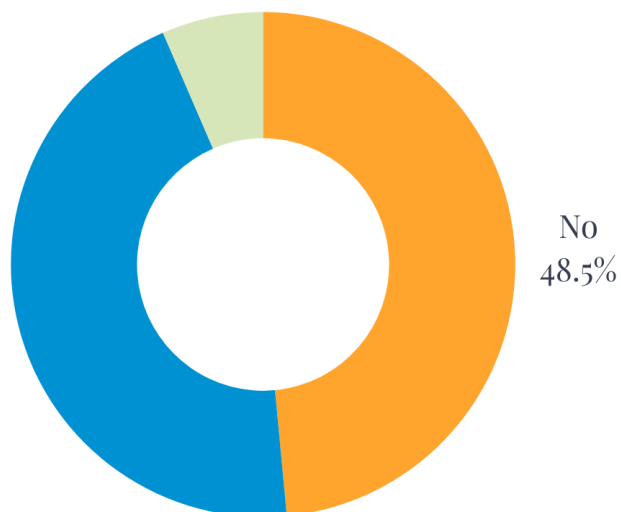
However, completing a certificate may make matriculation into a master's program easier at some institutions. The survey of graduate schools asked how earning post-baccalaureate certificate relates to admission into a related graduate degree program. About half of graduate schools reported that earning a certificate has no effect on graduate admissions, while more than 40% of them reported that certificate students have a simplified admissions process and about 7% reported that a certificate guarantees admission to another program. This shows that **post-baccalaureate certificates are used as a type of qualification in the graduate admissions process, and it could serve as a pathway to help students access graduate education.** As the case study from North Carolina Agricultural and Technical University on the next page shows, graduate certificate admissions present a pathway into master's programs for students who may have had disrupted learning or are unsure of if they want to commit to a master's program.

*Is it
"stackable"?*

Yes, but this is an ancillary objective
45%

Yes, this is the sole purpose of the certificate

6.5%



Certificates as an Admissions Pathway into Master's Degrees at North Carolina A&T University

Lesson: Certificates and other microcredentials can be pathways into graduate degree programs by providing learners with the opportunity to get experience with graduate-level work without the financial and time commitment of a degree



Access is central to the mission of **North Carolina Agricultural and Technical State University**. As the largest HBCU in the nation and a land grant institution, North Carolina A&T has served the residents of North Carolina by providing education and research opportunities to learners historically underserved by higher education. N.C. A&T leaders identified graduate certificates as a pathway for learners to gain experience in graduate education without taking on the financial risk and time commitment of enrolling in a degree program. They also identified graduate certificates as an opportunity for students who struggled or may have had disrupted learning in their undergraduate program to prove that they could do graduate work before being admitted to a graduate degree program.

There are two pathways into a graduate certificate at N.C. A&T. The first is through direct application. A student applies to the certificate and is either admitted or not. The second is indirectly through an application into a related master's degree program. If a student applies to a master's degree program and is not admitted, they may be offered admission to a graduate certificate program in that field. Since many of the courses are shared between a master's degree and a graduate certificate program, success in the graduate certificate is a strong indicator of master's degree program success. Students that enroll in and succeed in N.C. A&T graduate certificates are then given a chance to gain admission to a master's program upon completion of the certificate.

Using the graduate certificate as a pathway into master's degree programs has several benefits. It provides the learner with an opportunity to demonstrate the ability to do graduate-level work even if they do not possess the undergraduate GPA or test scores to be admitted to a master's program directly. For the university, graduate certificates can serve as feeders into master's degree programs. Graduate certificates can also be deployed more quickly than master's degree programs, so high enrollment in a graduate certificate can be used as evidence of learner demand when determining if a master's program should be developed. Finally, graduate certificate programs can potentially increase the diversity of graduate programs as students from underserved communities.

Of course, financial aid is always an important component of graduate education equity and access. For this reason, the survey of graduate schools asked questions about certificate program tuition costs and financial aid eligibility. According to our survey findings, post-baccalaureate certificate students are eligible (57%) or conditionally eligible (26%) for financial aid at most participating institutions. In terms of per credit hour tuition cost, over half (57%) of the survey participants reported that tuition cost is the same per credit hour for post-baccalaureate certificates as the rate for other graduate degree programs. In some institutions, the post-baccalaureate certificate program tuition differential varies across programs and/or delivery platforms (15%).

To understand how post-baccalaureate certificate programs affect diversity and equity in graduate education, the survey of certificate program directors asked how transcribed, credit-bearing certificate programs increased the representation of underrepresented groups in graduate degree programs in their department. The responses indicated that post-baccalaureate certificate programs are more likely to increase the representation of women, part-time students, and older students. However, only a small number of program directors reported that their certificate programs increased the representation of underrepresented minority student groups. In general, certificate programs were not viewed as important for diversifying the graduate student body, with only about 20% of program directors indicating that certificates were moderately or very valuable for diversifying the student body. Post-baccalaureate certificate programs may still provide a greater opportunity for institutions to recruit graduate students from non-traditional backgrounds, but to accomplish this, issues of financial aid will need to be more closely examined.



...post-baccalaureate certificate programs are more likely to increase the representation of women, part-time students, and older students.

However, only a small number of program directors reported that their certificate programs increased the representation of underrepresented minority student groups.

Employer Demand and Hiring Preferences

The final set of survey questions asked graduate schools about the likelihood that post-baccalaureate certificates would replace the post-baccalaureate degree as the credential certificate of choice for employers. Most of them reported that it definitely (15%) or probably (62%) would not. This suggests that graduate deans tend to think graduate degree remains the credential of choice and have higher value than certificates. To further explore the value of post-baccalaureate certificates, we asked graduate deans an open-ended question on their thoughts on what a master's degree signals to an employer that a stand-alone graduate certificate does not.

One graduate dean responded, for example, that "A master's degree signals a cohesive, substantial program of study, which is often with a research component; whereas, certificates are often more applied, and skills based, and limited in focus."

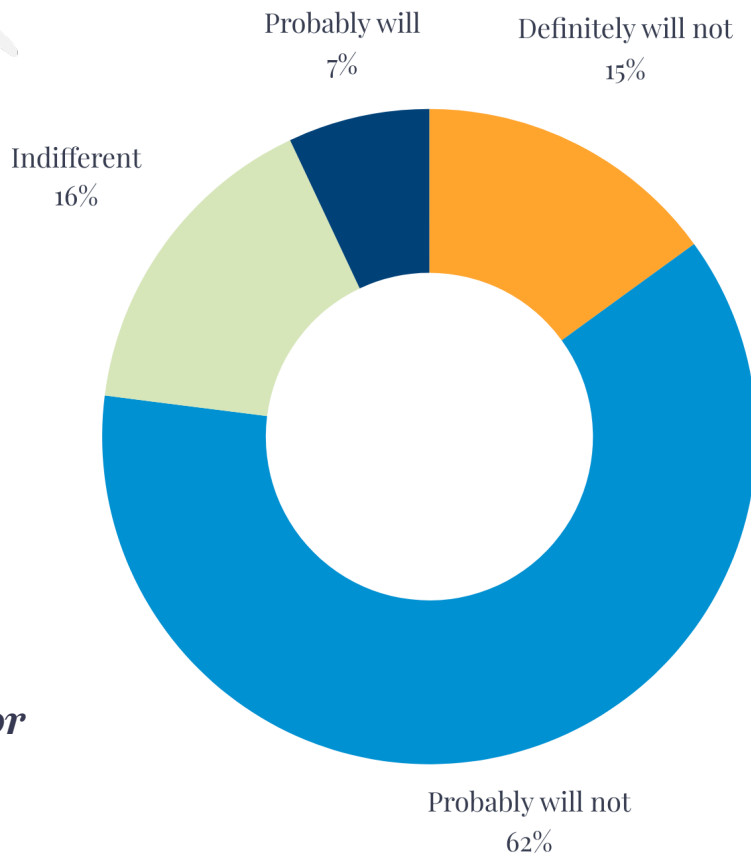
Another graduate dean responded: "There's a broad understanding of what it means to have a graduate degree. This is not the case for a certificate. Because certificates can cover general understanding of a narrow topic, provide the ability to get licensed in a very specific area, or used as the equivalent of a graduate "minor," their intent is confusing. The use of a graduate certificate also relies on the person reviewing the credential to understand the value and depth of the content. Even when that's lacking with a master's, there is still understanding of what that is."

Similarly, one graduate dean responded, "An MS [Master of Science] degree would certainly have a more in-depth study of the major, more so that what could be accomplished in a certificate program. I would think that the attractiveness of the certificate to an employer is the speed that a certain skill or knowledge area could be obtained."





How likely do you believe it is that certificates will replace the graduate degree as the certificate of choice for employers?



When asked how valuable graduate deans believe post-baccalaureate certificates will be over the next decade, we heard that the post-baccalaureate certificate is seen as most valuable to job retention and reskilling. Certificates were also viewed as valuable in providing a pathway into graduate degree and just-in-time training for entry into a first job. Our program survey indicated that there are gaps in understanding of what employers need and how these needs may be changing; half of certificate program directors noted that their department does not have a process for assessing employer demand (66%) or employer satisfaction (76%).

The data from the two surveys shows post-baccalaureate certificates as a credential that requires more consistent evaluation, particularly in relation to workforce demands. To be sure, many credentials are given this close attention to workforce and learner need, but our evidence suggests that this practice needs to be more widespread across programs and based on clear quality metrics. While there is innovative administrative work being done to use certificates to update curricula and align education with workforce demand, policies for how to manage that work have not been developed at many institutions. Furthermore, the infrequency of program review and absence of sunseting policies at many institutions indicate that these programs may not be updated frequently enough. The next chapter will examine in more depth the relationship between post-baccalaureate non-degree credentials and employer demand, which is one of the central motivations for creating many graduate certificate programs.

Chapter 3

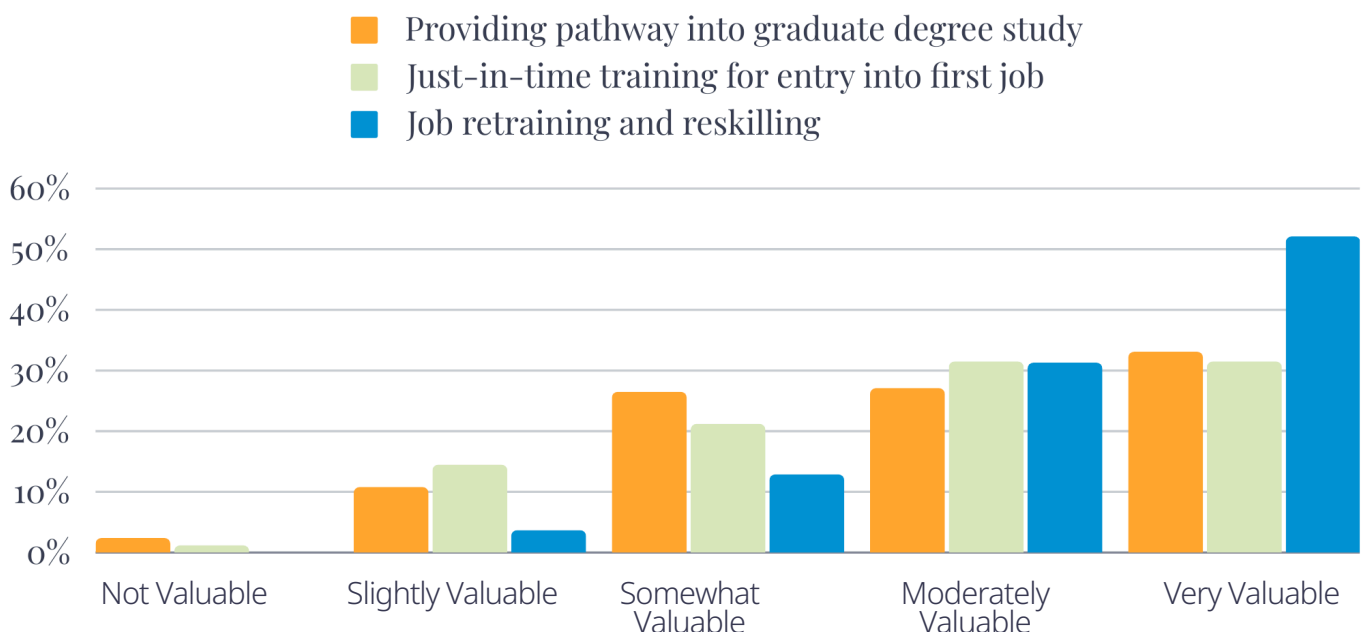
Workforce Demand and Employer Partnerships

Better alignment between workforce demand and graduate education is important to the expansion of high-quality, non-degree graduate credentials. The trend towards skills-based hiring has spread worldwide as employers seek to improve talent acquisition and create more equitable access points to employment. According to a recent Deloitte global workforce survey, 80% of executives surveyed said that “making decisions about hiring, pay, promotions, succession, and deployment based on people’s skills rather than their job history, tenure in the job, or network would reduce bias and improve fairness” (Cantrell, et al., 2022). Graduate certificates and other microcredentials have great potential as the mechanism for offering

in-demand skills as well as ensuring that new and existing programs keep pace with quickly-evolving fields. Beyond making skills more transparent to learners and employers, certificate and microcredential programs provide opportunities for universities and employers to collaborate to upskill and reskill currently employed workers. This chapter will explore how non-degree graduate credentials are perceived by employers, how employer demand shapes program creation, and what models for partnerships between graduate programs and employers may look like.

80% of executives surveyed said that “making decisions about hiring, pay, promotions, succession, and deployment based on people’s skills rather than their job history, tenure in the job, or network would reduce bias and improve fairness” (Cantrell, et al., 2022).

Figure 1, Graduate Dean Survey: How valuable do you believe graduate certificates will be over the next decade in...?



Understanding Workforce Demand: Credential Transparency and Quality

Employer demand for skills-based credentials is one of the important reasons motivating universities to create graduate certificates and other microcredentials. In our focus groups and interviews with graduate deans and program directors, employer demand for skills-based credentials was a central theme. Deans spoke of the need to work with employers to build more transparent, skills-based programs and many saw certificates and non-degree credentials as an important vehicle for this collaboration. These conversations were also reflected in the survey findings. As noted in the previous chapter, graduate deans believed graduate certificates were valuable tools for employment, with 52% of respondents to the dean's survey indicating that certificates will be "very valuable" for job retraining and reskilling over the next decade with no respondent viewing them as not valuable (Figure 1). There was broad consensus among deans surveyed as part of this project that graduate certificates and non-degree credentials were valuable in preparing learners for all phases of their careers.

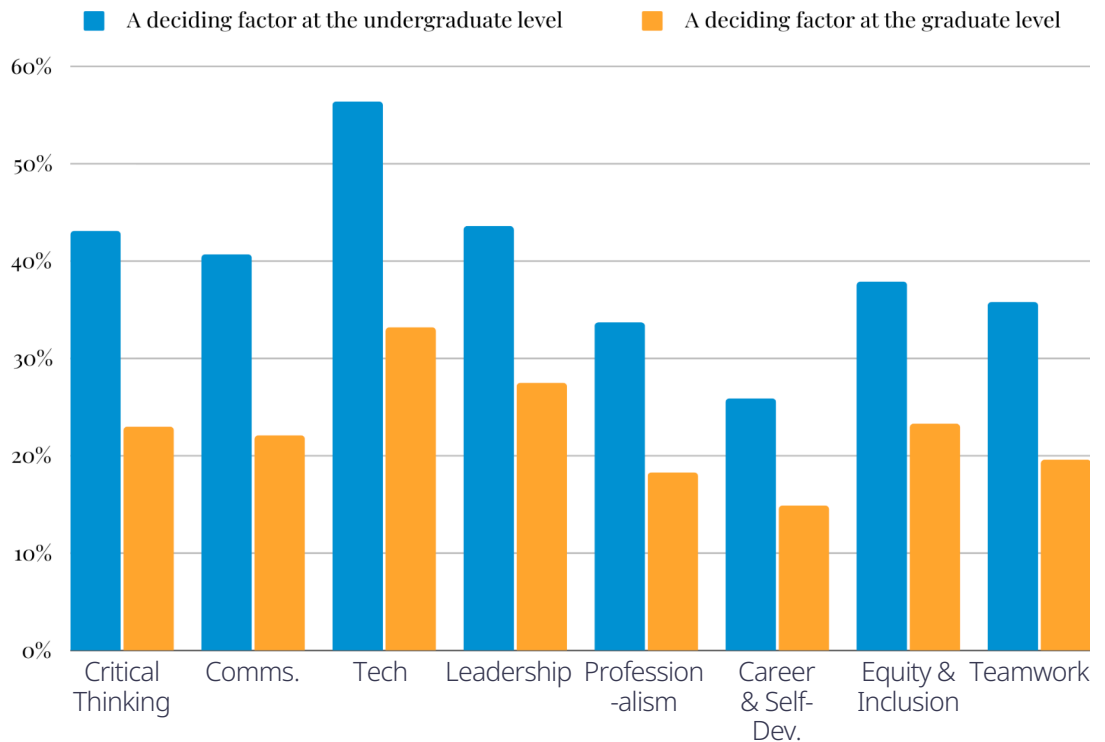
Lack of employer transparency in terms of hiring practices and the value placed on specific skills remained an area of uncertainty for many graduate deans. They were unsure of what employers wanted, were unsure how to approach employers about assessing need or creating partnerships. This made it difficult to assess and communicate employer demand to prospective students. As the convening takeaways suggest (Appendix C), greater clarity from employers about desired skills and competencies would help improve the design of non-degree programs.

Furthermore, universities would like to be part of discussions about local and regional workforce needs, so that they can work proactively with employers and government to create programs to fill those needs. More transparent employer hiring processes will help universities create programs responsive to workforce demand and inform learners about skills and competencies desired by employers.

For their part, employers value university credentials, though many see most of the value in non-degree credentials as applying to baccalaureate and sub-baccalaureate learners. In collaboration with the National Association of Colleges and Employers (NACE,), which surveyed 339 employers about their perceptions of post-baccalaureate graduate certificates, CGS learned that although 20% of employers surveyed were currently seeking candidates with certificates, there was no certificate-backed skill identified as a deciding factor in making a hiring decision (Figure 2) by more than one third of employers. This is in contrast to the undergraduate level, where a technology-related undergraduate certificate was a deciding factor in making a hiring decision for 54% of employers surveyed.

Though not always a key factor in hiring decisions, employers do indicate that college and university certificates are of superior quality to those offered by other providers. The same survey found that 75% of employers believed college and university certificates to be of high or very high quality compared to just 13% of online providers and 26% of corporate providers (Figure 3). Caution should be used in interpreting this finding, however. Though online and corporate certificates were rarely viewed as being of high or very high quality, they were often viewed as adequate, with 65% of online certificates and 67% of corporate certificates meeting that standard. Since these graduate credentials are often marginal in making hiring decisions,

Figure 2, NACE Employer Survey: Are certificates a deciding factor when making a hiring decision?



it remains unclear whether the quality difference between a certificate earned at a university and one earned through an online provider is enough to tip the scales towards one candidate over another.

Though graduate deans were confident that certificates had an important role to play in upskilling and preparing workers for new careers, there was less evidence on the employer side to suggest that employers saw graduate certificates and other micro-credentials as viable reskilling pathways. As Gallagher (2023) suggests, some of this may be due to lagging human resources systems that do not account for the multiplicity of new credential types and titles that have emerged over the past several years.

The misalignment between degree and credential when it comes to reskilling may also limit credential recognition, however. When a graduate credential does not match a job candidate's degree portfolio it can cause confusion for the hiring team. Furthermore, with the focus on many graduate non-degree credentials as applied and

skills-focused, some hiring managers look to degrees for evidence that a candidate possesses foundational knowledge and skills in a field. For example, one national employer who had a data analytics microcredential partnership with a university noted that when hiring for data science roles they only interviewed candidates who had the certificate and a degree in an adjacent field (like statistics, mathematics, or computer science). Candidates without degrees in relevant fields were not considered. This suggests that not only is the non-degree credential understood within the existing degree-focused ecosystem, but that degree-credential alignment may play an important role in hiring decisions that may limit the value of the non-degree credential on its own as a vehicle for reskilling.

University-Employer Partnerships: Community and Communication

One way for universities to align credentials to workforce demand is through direct partnership with an employer. University-employer partnerships can provide connection between a university program of study and a career by directly matching the curriculum to skills required to work at a specific job. While these partnerships offer a variety of benefits to the university, employer, and learner, navigating the relationship between the two partners, and making sure the relationship continues to be mutually beneficial, can be a challenge.



Despite employer demand being a vital motivator for universities exploring post-baccalaureate certificates and microcredentials, there are relatively few of these partnerships and most of them are limited to a small number of learners. According to our survey of graduate deans, only 11% of programs partnered with a private organization in offering credit-bearing certificates and only 2.3% of programs partnered with non-profits. Over 40% of all programs had no partner and of the sixty percent of partnered programs, 26% were between departments at the same institution. When interviewing program directors for this project, most described their partnered programs as having fewer than ten enrollees. Since most of these partnerships were designed to train a cohort of employees from a single company in a set of technical skills, their possible enrollment was limited by a single employer's demand for a specific skillset.

These partnerships are also often fragile. Employer needs are always shifting, and university administration is sometimes not built to accommodate rapid changes in curricula. As the chapter's case study of Oakland University's partnership with a large automaker shows, this needn't always be the case, but there are also instances where certificate and microcredential programs fall into familiar administrative patterns more appropriate to degrees. Two of the core values agreed upon at the project's convening were flexibility and responsiveness (Appendix C). Building and sustaining partnerships with employers requires the administrative flexibility necessary to be responsive to changing workforce needs.

Employer needs are always shifting, and university administration is sometimes not built to accommodate rapid changes in curricula.



Pivoting with a Partner at Oakland University

Lesson: Listening to an employer's needs can help universities adapt their programs to fit changing employer demand.


Partnering with a large automaker was natural for **Oakland University**. A mid-size university in the Detroit metro area, the region has long been the center of the American automotive industry. A few years ago, a large automaker approached Oakland University about partnering on the creation of a business analytics graduate certificate. Together they created a 15 credit-hour graduate certificate in business analytics that could be stacked into a master's of science degree in Information Technology Management. Cohorts would be comprised solely of employees and would take one calendar year to complete. The purpose of the certificate would be to upskill their workforce in new developments and methods in business analytics.

This certificate program was successful, though over the course of a few cohorts, the large automaker began integrating the curriculum in their corporate training. The future of the partnership was uncertain. Still, the employer had a pressing need: the automotive industry was moving towards electric vehicles and the company's employees needed training in electrification for the company to remain competitive in the sector.

With the relationships in place for the business analytics certificate, the automaker and Oakland University were able to develop a new non-credit certificate in Engineering Electrification. This certificate had four tracks (three in propulsion and one in software) that aligned with employer need. The curriculum was jointly developed between Oakland University faculty and the automaker. This allowed the curriculum to meet immediate employer needs, while also mapping onto existing for-credit programs with the potential to be developed into a credit-bearing credential in the future. The certificate is jointly issued by Oakland University and the employer, which allows it to be both transferable to other employers and recognized by the internal employer advancement system.

This partnership has had a variety of benefits. It has provided an opportunity for Oakland University faculty to work with practitioners in industry and build stronger relationships between the university and industry. Since the program is offered to corporate employees worldwide, it has extended Oakland's reach internationally and bolstered its global reputation, in addition to providing new source of revenue for the university. Finally, it has provided new pathways into degree programs for certificate enrollees, which could be a source of future enrollment, and has compelled Oakland University to reexamine its tenure review policy to consider non-credit work as part of a tenure portfolio.

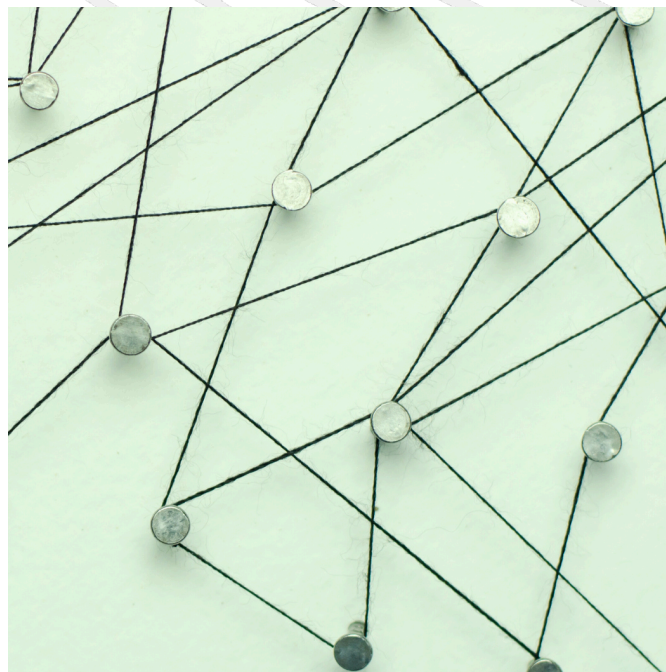
The success of this partnership was dependent on several factors: an engaged and interested faculty, an agile department willing to work with an outside organization, and a recognized business need that a university could fill. But more than anything else it was a functioning interpersonal relationship built upon trust, listening, and a willingness to be flexible that allowed Oakland University's partnership to but thrive when confronted with changing employer needs.



As part of the process of building strong lines of communication between universities and employers, it's important to clarify the benefits each sees in partnership. Our research illuminated a disconnect in this area. In our focus groups and interviews with graduate deans, deans emphasized that the specialized knowledge faculty possess as the major incentive for employers to partner with universities. Our conversations with program directors and employers told another story. Though both groups did say that knowledgeable faculty were vital to effective instruction, they also noted that university expertise in curriculum design and access to university facilities (particularly libraries and laboratory space) were as important as faculty knowledge.

While bespoke certificate and microcredential programs built to meet the needs of specific employers predominated in our research, institutions with a longer history of employer partnerships have proven that institutions can create administrative structures and programs that may be portable between employers. Marquette University's "hub-and-spoke" model may provide one such example, since a hub in a generalized skillset like statistics or data analytics may be customized for specific employers with spokes suited to their unique needs. The University of North Texas provides another approach. At UNT, their data analytics certificate has been customized to meet the needs of a variety of employers. As the case study on the program demonstrates, the UNT program has the added feature of using employer feedback to improve and deliver courses to students enrolled outside the employer partnership. In this way, the employer partnership benefits not only the university and the employer, but the broader community of learners enrolled at the institution.

While bespoke certificate and microcredential programs built to meet the needs of specific employers predominated in our research, institutions with a longer history of employer partnerships have proven that institutions can create administrative structures and programs that may be portable between employers.



Sustaining Corporate Relations at the University of North Texas

Lesson: Never build something for only one purpose.

In the mid-2010s, the data analytics program at the **University of North Texas** heard from a national bank that they were looking to improve retention of data scientists by providing pathways to career advancement. A component of this retention plan was to upskill data scientists through participation in a tuition reimbursement plan to gain skills and knowledge from local universities.

However, this plan was not being widely used by employees because it was not offered directly through their employer. The University of North Texas saw an opportunity to collaborate directly with an employer to create and deliver a data analytics certificate that would develop skills valued by the employer and present an opportunity for employee career advancement.

In collaboration with data analysts at the national bank, UNT designed a curriculum of five for-credit courses that mapped onto existing courses in the master's in data analytics degree program. This approach was piloted with an initial cohort and was so successful that it was developed by the employer as a recurring program. The certificate was also spun off into a parallel undergraduate certificate that served two purposes. First, it was an opportunity for employees with less developed data analytics skills to learn at the undergraduate level before moving onto graduate-level work. Second, the demonstrated employer demand for data analytics skills showed the University of North Texas that students learning these skills would be valued by employers and would have enhanced career prospects.

The collaboration between the University of North Texas and the national bank showed how employer-university collaborations could have benefits beyond the initial shared goal. While the program was only meant for graduate students, the employer demand for multiple entry points into the data science skills pathway showed the value of developing an undergraduate certificate matching its graduate counterpart. This certificate has since become a popular concentration in the data analytics undergraduate degree. Furthermore, the graduate certificate can be stacked with other data analytics courses for a complete Master of Science in data analytics. The ability to stack the graduate certificate into a master's degree created an incentive for employees to take the certificate for career advancement and presented the University of North Texas with a new pipeline of potential students into their Master of Science program. ►



► With the collaborative framework established as part of the partnership with the national bank, UNT's demonstrated success in working with employers encouraged other employers to partner with the university. Like the bank, a large automaker was interested in upskilling their data scientists and partnered with the UNT data science program. Here again, the curriculum was designed with managers from the automaker and the program was designed to upskill and retain data analysts. However, the curriculum and the program were customized to meet the needs of the employer. Unlike the prior partnership, the new partnership offered short, focused non-credit courses to quickly upskill staff. The course content was also customized to train staff in specific applications using case studies relevant to the employer. This partnership has been in place for eighteen months and the employer has expressed interest in expanding the program to allow larger numbers of staff to be trained in this way.

The automaker collaboration has benefited UNT in several ways. Aside from being another direct revenue stream to the institution, it has created a cohort of potential master's and doctoral students for UNT to recruit from. It has also brought senior managers from the automaker into the UNT network, where they serve on boards and can help advise the institution about identifying market gaps in education and training. Finally, it has encouraged an entrepreneurial mindset among faculty and staff, which has led to discussions about new employer partnerships.

The success of UNT's data analytics program in partnering with large employers is linked to a variety of factors. Buy-in from senior administrators and faculty has been paramount. Successful partnerships depend on engaged faculty and administrators who will nurture relationships with outside stakeholders. An entrepreneurial mindset across the institution is also key. Partnerships often require a reexamination of policies and practices, which can be uncomfortable for some units. For a partnership to succeed, however, flexibility and adaptation are necessary so that the institution has the leeway necessary to address employer needs.

As with many aspects of post-baccalaureate, non-degree credentials, alignment between university providers and employers is still developing.

Universities are doing a better job of recognizing employer needs and building programs to meet those needs. These partnerships are still maturing but show promise in demonstrating the value of post-baccalaureate credentials to employers. Focus on workforce preparedness for university learners is and will likely remain a trend across higher education for the foreseeable future. While non-degree credentials will likely remain an important part of that trend, it is also likely that degree programs will evolve to deliver appropriate academic materials and simultaneously meet employer needs.

Chapter 4

Postbaccalaureate Credentials: Private Benefit and Workforce Accelerator

The focus on postbaccalaureate certificates and other microcredentials as ways to align skills with workforce needs has facilitated their rapid growth. These credentials represent promising new pathways to career advancement for many professionals. At the same time, the speed of these credentials may help degree holders stay relevant in their fields longer while providing the flexibility to balance learning with full-time careers and family responsibilities. The emphasis on the personal benefit gained by credential holders masks important ways emerging credentials contribute to the public good, however.

Microcredentials provide rapid upskilling and reskilling for workers in fields of national need including teachers, nurses, cybersecurity, and data analysis.

While graduate education's contributions to the local and national public good is not new—master's and doctoral degree holders have served the American public for decades—in an era of rapid change brought about by new technologies, certificates and other non-degree credentials represent new pathways to fill areas of public need at a pace commensurate with our high-speed society.

The public impact of post-baccalaureate certificates and other microcredentials is most evident at the local level. As noted in the figure below, teaching was the field with the most certificates being offered according to the CGS survey of graduate deans (see Figure 1 on page 34). Since in many states, teachers are

required to have a graduate credential, postbaccalaureate certificates may be a way for teachers to advance in their career quickly and without needing to enroll in a full-time master's program.² At the same time, these certificates provide teachers with new skills and competencies to make them better teachers. In a series of interviews for this project, a cohort of Missouri teachers that completed an Elementary Math Specialist certificate noted that the specialized training offered by postbaccalaureate certificates allowed them to deepen their knowledge of math pedagogy and become more effective instructors. A few were so enthusiastic about their experience that they were informally training other teachers and staff at their schools in the methods learned in their program, which demonstrates the ways that advanced education for an individual may have broader community benefits.

² As of 2023, 33 states require a master's degree to be certified as a teacher in the state. However, there are currently no states that require a completed master's degree to begin teaching in the state (Ohio, New York, and Massachusetts require the completion of a master's degree within five years of signing the first teaching contract). States will often offer incentives to teachers that do possess graduate degrees and/or certificates, including better pay and faster advancement. For more information, see teachingdegrees.com/programs/high-school-education.

As noted in this chapter’s case study on Missouri State University, the success of post-baccalaureate teaching certificates in Missouri is at least partly owed to the recognition by state government that investing in teaching is an investment in the public good. Math and special education certificates were fully subsidized by the state in order to improve teacher quality as well as retain promising teachers by creating pathways for professional advancement. Several of the teachers participating in this project said that they would not have enrolled in the certificate if it had been fee-based. Furthermore, two of the teachers said that the professional advancement opportunities that came with the certificate were important incentives for retention.

Teaching is not the only field where non-degree credentials have emerged to serve the community. In nursing, certificates allow for nursing specialization in fields like nursing informatics and gerontology as well as career advancement through certificates in nursing leadership. Other fields of national need such as cybersecurity and artificial intelligence can use certificates and other non-degree credentials to upskill the information technology workforce to meet emergent threats to national defense and security.

Figure 1: Most frequent certificate types by broad field



Investing in the Public Good by Retaining and Upskilling Missouri Teachers

Lesson: Certificates and microcredentials can help provide advancement pathways for individuals serving their communities.

During the COVID-19 pandemic, Missouri was facing another crisis: teachers were leaving the state at an alarming rate, causing an acute teacher shortage. Missouri had the lowest base teacher compensation of any state in 2022 with a starting salary of \$25,000. Average teacher attrition rates between 2016 and 2022 were more than 11%, which was significantly higher than the national average of 8% according to the Missouri Department of Elementary and Secondary Education (DESE, 2021). Furthermore, enrollment in teacher education programs fell by 25% between 2016 and 2022, making it more difficult to replace teachers leaving the state or profession.

The need to address the teacher shortage led the state to invest \$50 million in the **TeachMO.org program**, whose mission was to improve teacher recruitment and retention. TeachMO.org includes an interactive dashboard where prospective teachers can learn about the profession and access information about certification and financial aid.

One aspect of teacher retention was to provide clear pathways for advancement within the profession. This goal aligned with school demand for more literacy, math, and special education specialists. The Missouri Department of Elementary and Secondary Education (DESE) identified institutions of higher education that could provide training to current teachers in literacy, math, and special education and provided qualified teachers with grants to enroll in teaching certificate programs at those universities. Elementary Mathematics Specialist enrollees were required to be current teachers at the elementary or middle school level, have at least one year of classroom experience, and commit to completing the program within two years. The program requires sixteen credits and can be completed entirely online. Upon completion, enrollees will receive a graduate certificate in Elementary Mathematics Specialist (EMS) and a certification through DESE.

The teachers from Missouri State University who participated in our focus group appreciated that the program provided an accessible onramp to career advancement. Since Missouri teacher salaries are low, it was simply not possible for some of the teachers interviewed to afford a master's program. Others noted that because the certificate could be completed entirely online, it was easier to balance learning with work and personal commitments. This was especially true for the rural teachers, who said that distance from a physical campus was a disincentive to pursue graduate education and a barrier to recruiting new graduates as teachers. What surprised many of the teachers interviewed was how enrolling in the Elementary Mathematics Specialist certificate, which they saw primarily as a vehicle for career advancement, rekindled a love of learning.

Questions about financial aid for students seeking non-degree credentials is the primary arena where debates about private benefit and public good play out. While Title IV certificates are eligible for federal financial aid, other types of non-degree certificate programs, badges, and microcredentials often do not meet federal student aid requirements. In our survey, we found that 35% of deans surveyed did not include students enrolled in transcribed, credit-bearing graduate certificates as eligible for financial aid. A further 33% offered conditional financial aid available where, in most cases, students only qualified if they were concurrently enrolled in a degree program. Survey respondents also noted that restrictions in financial aid made it more difficult for non-degree programs to recruit diverse cohorts.

Confusion and concern about financial aid for non-degree credential enrollees was a persistent theme of the project convening in June 2023 and was frequently raised in survey responses from deans and program directors. This conversation comes during a period of declining public financial support for higher education. **Between 2001 and 2019, investment per full-time enrolled student declined from \$9,547 to \$7,388 per**

student (Cummings et al., 2021). These cuts have had deleterious effects on credential attainment (Bound, et al., 2019), lengthened time-to-credential (Chakrabarti et al., 2020), and increased the likelihood of having a student loan in default or delinquent status (Chakrabarti et al., 2020). Institutions have pursued several strategies to bridge this gap, including raising tuition, enrolling higher percentages of international students, and private sector fundraising.

While in theory non-degree credentials are part of the solution to decreased state support for higher education, our research suggests that this is not yet the case in practice. Part of the perceived utility of these non-degree credentials is that they may be less expensive than graduate degrees and may not require a student to take out a loan or require other financial support. Our discussions with program administrators and students found, however, that many students were not inclined to enroll in non-degree programs without financial support, be it from an employer, the credential provider, or the state. If universities anticipate non-degree credentials to make up a larger part of their enrollment portfolio going forward, expanding and clarifying federal financial aid for those programs is necessary.



Standardizing Credential Quality for the National Interest

Beyond expanding federal financial support for non-degree certificates and microcredentials, asserting the public value of these programs may also aid in the standardization of definitions and quality assessment metrics. The field of cybersecurity is one area where a national standardization effort is already underway. The urgent need for greater numbers of cybersecurity experts is well documented. A (ISC)² report revealed that an additional 3.4 million cybersecurity professionals are needed to maintain the current cybersecurity standards and that 70% of respondents reported working at organizations without sufficient cybersecurity staff ((ISC)², 2023). These gaps are most pronounced in areas vital to the American national interest including hospitals and electrical grids (World Economic Forum, 2023). A lack of readily available, standardized training in cybersecurity remains an obstacle to filling this urgent need.

There is some progress on this front. The National Security Agency (NSA), in partnership with Department of Defense and the Defense Information Systems Agency (DISA), has created the National Centers of Academic Excellence in Cybersecurity (NCAE-C) to establish standards for cybersecurity curricula and academic excellence. Higher education institutions may choose three designations aligned with workforce need—cyber defense (CAE-CD), cyber research (CAE-R), or cyber operations (CAE-CO)—and upon validation of a Program of Study can receive official designation as a Centers of Academic Excellence (CAE) institution.

At a more granular level, the National Institute of Standards and Technology (NIST) has created the National Initiative for Cybersecurity Education (NICE) framework to collect and classify cybersecurity skills, knowledges, and competencies into a comprehensive framework that aligns with workforce demand and careers. The NICE framework is intended to define cybersecurity competency areas to make cybersecurity education more transparent for learners and employers, while providing educational organizations with clear guidelines for program creation and review (Wetzel, 2023). The NCAE-C and NICE frameworks offer the most comprehensive American national attempt to define and standardize the skills and competencies provided by non-degree programs. Widespread recognition of the public value of cybersecurity skills and competencies in a world of increasing cyber threats has driven this standardization effort.

The demand for certificates and other microcredentials in teaching and cybersecurity demonstrates that **though the skills and competencies gained in non-degree programs may have private benefits in terms of career advancement and increased wages, they also are vital in building stronger communities and supporting the national interest.** For post-baccalaureate non-degree programs to thrive, greater federal investment is needed as well as clarity about the allowability of federal student aid programs for seekers of non-degree credentials. Recognition of the public value of these credentials may have other positive downstream impacts on credential standardization and quality assessment as well.

The NCAE-C and NICE frameworks offer the most comprehensive American national attempt to define and standardize the skills and competencies provided by non-degree programs.

Conclusion and Areas for Further Research

This report was an exploratory one, aimed to uncover the broad trends of postbaccalaureate non-degree credentials. Though postbaccalaureate microcredentials remain a quickly developing area, there are many opportunities to understand this space as it is taking shape. Developing a better understanding of the non-degree learner is the most significant gap in the research. For universities to honor their mission by creating student-centered programs, it is essential for researchers to better understand who non-degree students are and what they seek.

The needs of employers will continue to be an evolving area of further study. Important research has been conducted by NACE, SHRM, and others on employer perceptions of certificates and other non-degree credentials. This research is still in an exploratory stage, however, and a consistent narrative about how employers value non-degree credentials has yet to emerge. Since the motivation for establishing many of these credentials is perceived employer demand, a better understanding of how employers value those credentials will help universities and learners determine what skills and competencies are worth pursuing.

More detailed work within specific workforce sectors, such as teaching and cybersecurity, where there is significant microcredential development will also be important. Currently, most research in the field focuses on the credential itself and not the specific disciplinary or workforce context that creates demand for the credential. This research will provide a better sense of which credentials are valuable on their own and which are best suited as pathways into or complements to graduate degrees.

Finally, there is an open question about whether microcredentialing will persist as a modality or whether its most promising features – incremental credentialing, responsiveness to workforce demand, flexible pathways into programs, and ways of distributing the cost of a graduate education over a longer time frame – will be folded into graduate degree programs. As the ecosystem of degrees and non-degree credentials evolves, it is possible that degrees will adapt to incorporate insights from experiments in non-degree credentialing, while credentials are strengthened with the quality assurance processes of degrees.

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Appendix A: Project Steering Committee

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Appendix B: Workshop Agenda

Graduate Microcredentials and the Master's Degree:

Ensuring Value for Students and Employers

Washington, DC

June 9-10, 2023

Day 1: Friday, June 9, 2023

- 3:30-4:00 p.m. Check-in at Registration Desk
- 4:00-4:20 p.m. **Welcome**
Suzanne T. Ortega, President, Council of Graduate Schools
Alberto Acereda, Associate Vice President, Global Higher Education, ETS
- 4:20-5:30 p.m. **What do we currently know about graduate-level microcredentials? What don't we know?**
During this session, the Council of Graduate Schools will share preliminary findings from the project, including survey results, insights from focus groups with key stakeholders and highlights of case studies. This session will also explore the challenges of defining key terms and concepts.
Presentations and Q and A (4:20-4:50 p.m.)
Jeff Allum, Project Consultant and Founder, Blue Light Stories
Matthew Linton, Senior Manager, Programs and Publications, CGS
Madeline Rowe, Graduate Student Researcher, CGS
Enyu Zhou, Senior Research Analyst, CGS
Discussion-based activity (4:50-5:10 p.m.)
Report Out (5:10-5:30 p.m.)
- 5:30-6:30 p.m. **Networking Reception in Kalorama Room**
- 6:30-8:00 p.m. **Dinner and Panel Discussion: What Do Employers Want?**
This panel will explore the reasons behind employer demand for skills-based credentials as well as the challenges employers face in assessing and evaluating emerging credentials. Workshop participants have the opportunity to ask questions.

Employer Panel (7:15-8:00 p.m.)

Stanley Litow, Professor and Innovator in Residence; Chair, CGS Employer Roundtable

Amanda Winters, Director, National Governors Association Center for Best Practices

Moderator: Suzanne Ortega, CGS President

8:00 p.m.

Conclusion of Day 1

Day 2: Saturday, June 10, 2023

7:30-8:30 a.m.

Breakfast available

8:30-9:30 a.m.

Promoting and Evaluating Quality

Emerging postbaccalaureate certificates and digital badges often don't fit neatly into existing quality assessment frameworks. This session will explore how two institutions have grappled with the challenge of quality assurance for emerging credentials. Topics of discussion will include credential transparency, return on investment for students, and balancing quality assurance with the need for flexibility and agility in responding to workforce needs.

Presentations and Q and A (8:30-8:50 a.m.)

Julie Masterson, Associate Provost and Dean of the Graduate College, Missouri State University

Chris Nelson, Dean, School of Graduate Studies, University of North Dakota

Discussion-based activity (8:50-9:30 a.m.)

9:30-10:30 a.m.

Building Relationships with Employers

Universities often work with employers to develop credentials and badges. This session will examine types of partnerships that have emerged and the challenges and benefits of creating and sustaining them.

Presentations and Q and A (9:30-10:00 a.m.)

Michael Monticino, Chair, Advanced Data Analytics, Toulouse Graduate School at the University of North Texas (UNT)

Victor Prybutok, Vice Provost for Graduate Education and Dean of the Toulouse Graduate School at the University of North Texas (UNT)

Brandy Randall, Graduate Dean, Oakland University

Discussion-based activity (10:00-10:30 a.m.)

10:30-10:45 a.m.

Morning Break

- 10:45 a.m.-12 p.m. **How do microcredentials relate to degrees in the new graduate ecosystem?**
- What is the relationship—current and evolving—of microcredentials and degree programs? To what extent are students interested in using microcredentials as a “stackable” building block for a longer degree program? To what extent are they seen as a “value add” to students who are already committed to the degree? Finally, are degrees likely to retain their value in a world of just-in-time learning?
- Presentations and Q and A (10:45-11:05 a.m.)*
- Clay Gloster, Vice Provost for Graduate Research and Dean of the Graduate College, North Carolina A&T University
 Doug Woods, Vice Provost for Graduate and Professional Studies and Dean of the Graduate School, Marquette University
- Discussion-based activity (11:05 a.m.-11:45 p.m.)*
- “Vote” on your favorite ideas of the morning (11:45-12:00 p.m.)*
- Participants will be provided with stickers to place next to their favorite suggestions on the group posters.
- 12:00-1:30 p.m. **Lunch**
- 1:30-2:30 p.m. **Microcredentials, the Master’s Degree, and the Future of Work**
- How will postbaccalaureate microcredentials translate to future workforce trends? How can we create certificates and digital badges that have enduring value? This session will explore trends in microcredentialing and workforce development. It will discuss the return on investment for these credentials as well as how they can be deployed for the jobs of the future.
- Presentations:*
- Allison Forbes, Vice President, Research, Center for Regional Economic Competitiveness
 Holly Zanville, Research Professor, George Washington University, and Co-Director of the Program on Skills, Credentials & Workforce Policy, Credential as You Go
- 2:15 p.m. Questions and Discussion*
- 2:30-3:30 p.m. **Principles and Action Agenda**
- In this final session, CGS staff will present draft principles and presentations based on the presentations, poster gallery, and discussions. Participants will have the opportunity to provide feedback and ideas for future directions.
- 3:30 p.m. **Meeting Close**

Appendix C: Values, Principles, and Action Agenda

The CGS convening on June 9-10, 2023, informed a set of values and principles, and an action agenda for different stakeholders with strong investments in the quality of graduate-level microcredentials. These guidelines can serve as an important starting point for different groups seeking to develop, improve, and update credentials.

Values and Principles

- **Center students.** Programs should be created and refined with students in mind and should incorporate student feedback when possible.
- **Take a collaborative approach.** Identify stakeholders within the institution as well as the broader community. Systems thinking is important.
- **Be responsive** to industry circumstances, workforce needs, and student/learner demand and portability.
- **Listen and persuade,** taking in ideas and being intentional about the “who, when, and why” of implementation.
- **Be flexible.** Have policies and procedures in place to accommodate (for example) both credit and non-credit offerings, and offerings that create opportunities for everyone.
- Have **clear, transparent policies and procedures** written in a language that other stakeholders can understand. Develop common terms and taxonomies to make it easier communicate what non-degree credentials are and their value to diverse stakeholders.
- Be of **high quality.** While programs may have different quality assessment frameworks based on modality, there should be clear, evidence-supported policies to support and assess program quality.
- Promote **equitable access to meaningful work.** Program creators should think about how their programs can create pathways to meaningful work, particularly for those learners from underrepresented backgrounds.

Action Agenda for Stakeholders

Graduate Deans:

- Establish approval processes that balance rigor with room for innovation.
- Continuously cultivate strong industry partnerships.
- Coordinate marketing new certificate and microcredentials programs at your institution.
- Identify easy changes first to create a culture of innovation and build momentum to address larger challenges.
- Lead the conversation internally and externally about what universities are doing and why - be intentional.
- Utilize a coordinated enterprise approach, including prioritization and resource alignment.
- Create a safe space to start-up, test, and think through program creation and development.
- Advocate the long view to stakeholders who may have a shorter-term outcomes focus.
- Watch and learn about innovative policies and practices from researchers.
- Be part of ongoing feedback loops and systems with industry and community partners, as well as students/workers/learners (and understand that the needs of early-career learners are different than those of mid-career learners).
- Educate employers about graduate school. Why should they care?
- Advocate for new and innovative graduate education modalities when talking with local, regional, and state officials.
- Establish a sunset process for certificate programs that don't succeed.

Students/Learners/Working Learners:

- Be clear about your objectives and intentional in pursuing the credential.
- Understand the importance of being selective when posting badges and other credentials on social media.
- Tell graduate deans and other administrators if you want to earn credentials as you progress to a degree and if you care about which provider(s) your credentials are from.
- Provide data to universities, researchers, and other data gathering groups.
- Research program outcomes and have realistic expectations when enrolling in a credential.

Employers:

- Be in conversation with higher education to explain what they need their employees to do and collaborate with higher education partners to train employees and other learners in those skills.
- More and better data, particularly about skills needs and employee benefits/outcomes.
- Better communication within organizations about the value of graduate credentials, particularly between senior leadership and human resources managers.
- Provide relevant case studies for university use.
- Consider higher education in experiential learning and other professional development experiences for employees.
- Help higher education forecast future workforce needs.
- Invite higher education leaders to networking opportunities.
- Create opportunities for faculty to work with industry partners.

Federal and State Government:

- Standardize regulations for short-term credential programs - what defines half time and full time? How will financial aid be assessed? Update and clarify federal policies on funding certificate education.
- Quality assurance guidance, metrics, and regulations.
- Model how to be an innovative partner with higher education - often government is one of the largest employers in a state or region.
- Provide sustained and long-term funding for upskilling, reskilling, and developing innovative programs.
- Engage with government as a partner in creating policies and procedures about microcredential terminology, quality assessment, and return on investment for the learner.
- Provide constructive criticisms of university microcredential policies and work with university partners to address them.

